

1. A system for providing multiline service, the system comprising:  
 a modem for exchanging communications signals with a communications network and for exchanging an incoming digital signal and an outgoing digital signal with a statistical multiplexor;

the statistical multiplexor for exchanging the incoming digital signal and the outgoing digital signal with the modem, for multiplexing a plurality of outgoing encoded signals from a plurality of telephonic devices into the outgoing digital signal, and for demultiplexing the incoming digital signal into a plurality of incoming encoded telephonic call signals; and

at least one call processing element coupled to the statistical multiplexor for converting the plurality of incoming encoded telephonic call signals into a plurality of incoming phone signals, and for converting a plurality of outgoing phone signals into the plurality of outgoing encoded telephonic signals.

2. The system of claim 1, wherein the call processing unit encodes and decodes using Voice Over Internet protocol.

3. The system of claim 1, wherein the at least one call processing element exchanges signaling information with the communications network.

4. The system of claim 1, further comprising a means for bypassing the modems, statistical multiplexor and call processing element.

5. The system of claim 1, further comprising: control circuitry; and customer premises equipment interface circuitry for providing at least one of the group comprising: D.C. power, indications of on-hook and off-hook conditions, ring current, ring-back tones or busy tones; wherein the control circuitry communicates with the at least one call processing element and controls the customer premises equipment interface circuitry.

6. The system of claim 1, further comprising at least one data port coupled to the statistical multiplexor for exchanging a second portion of the encoded signals with the data device.

7. A system for simultaneously providing multiline phone and data service, the system comprising:

a modem for exchanging communications signals with a communications network and for exchanging an incoming digital signal and an outgoing digital signal with a statistical multiplexor;

the statistical multiplexor for exchanging the incoming digital signal and the outgoing digital signal with the modem, and for multiplexing an outgoing encoded telephonic call signal and an outgoing data signal into the outgoing digital signal, and for demultiplexing the incoming digital signal into an incoming encoded telephonic call signal and an incoming data signal; and

a call processing element coupled to the statistical multiplexor for converting the incoming encoded telephonic call signal into an incoming phone signal, and for converting an outgoing phone signal into the outgoing encoded telephonic signal.

8. The system of claim 7, wherein the call processing unit encodes and decodes using Voice Over Internet Protocol.

9. The system of claim 7, wherein the call processing element exchanges signaling information with the communications network.

10. The system of claim 7, further comprising a means for bypassing the modem, statistical multiplexor and call processing element.

11. The system of claim 7, wherein the incoming and outgoing digital signals are exchanged with a personal computer, and the incoming and outgoing phone signals are exchanged with a telephone or a fax machine.

12. A system for providing multiline calls, the system comprising:

a modem for exchanging customer signals over a telephone line having encoded therein a set of multiline calls, and for communicating incoming and outgoing digital signals with a statistical multiplexor;

the statistical multiplexor for exchanging the digital signals with the modem, and for multiplexing at least one outgoing encoded telephonic call signal from a telephone network into the outgoing digital signal, and for demultiplexing the incoming digital signal into at least one incoming encoded telephonic call signal;

at least one call processor coupled to the statistical multiplexor for converting the at least one incoming and outgoing encoded telephonic call signals into at least one telephone network call, and for providing the at least one telephone network call to a gateway switch for communicating over the telephone network; and

a control coupled to the at least one call processor for controlling the call processor and for exchanging signaling information with the gateway switch.

13. The system of claim 12, further comprising a router coupled to the statistical multiplexor for routing packets to the Internet or other data service; and wherein the set of multiline calls includes at least one telephonic and at least one data calls.

14. The system of claim 12, wherein the control also controls the modem and the statistical multiplexor.

15. The system of claim 12, wherein the call processor encodes and decodes using Voice Over Internet Protocol.

16. The system of claim 12, wherein the exchanged signaling information uses Signaling System 7 (SS7) protocols.

17. The system of claim 12, wherein the call processor encodes a telephone call signal originated from a remote device connected to the public switched telephone network.

18. A computer-readable medium containing computer-executable instructions for performing steps comprising:

receiving a voice call setup request from a remote wall unit;

initiating a telephone call set-up over the public switched telephone network using Signaling System 7 (SS7) protocols in response to receipt of the wall unit voice call setup request; and

connecting a call from the wall unit to the public switched telephone network by sending signaling messages to the wall unit in response to receipt of a SS7 messages from the public switched telephone network indicating the call is completed to a destination specified in the voice call setup message;

converting a Voice Over Internet Protocol encoded signal received from the wall unit to a voice signal recognizable by the public switched telephone network; and

converting a voice signal incoming from the public switched telephone network into a Voice Over Internet Protocol encoded signal for transmission to the wall unit.

19. The computer-readable medium of claim 18, comprising further computer-executable instructions for controlling a modem pool, a statistical multiplexor, and a call processor.

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